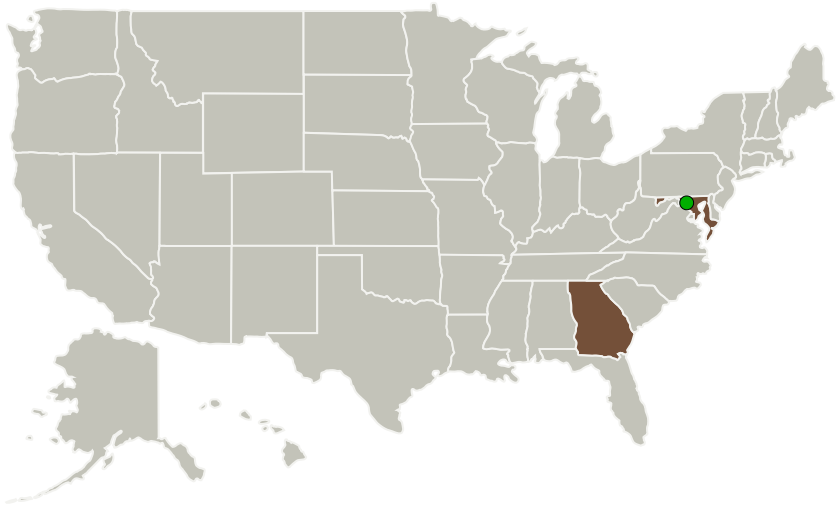
SLIM for Agile Mission Lifecycle Management, Phase I

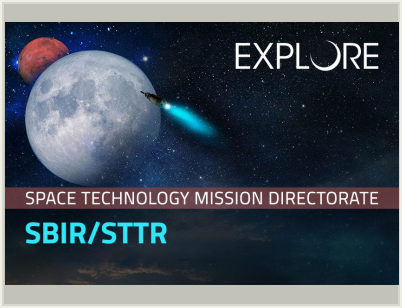
Completed Technology Project (2012 - 2012)

Project Introduction

The principal technical innovation is SLIM (Systems LIfecycle Management), a software environment for integrated model-based systems engineering, combining SysML (OMG Systems Modeling Language) and PLM (Product Lifecycle Management) toolsets. The SysML model provides fine-grained federation of information across an integrated set of design, analysis, simulation, requirements management and costing tools. PLM manages the same tools at a file-based level for configuration management, access control, and product data management. The objective of creating a low-cost, agile MBSE methodology is to provide a flexible engineering framework using standards-based modeling tools, existing detailed design and analysis tools (where acquisition and training costs have been amortized), and efficient work processes across domain boundaries, which we call "patterns of integration". The technical objective of the Phase 1 project is to demonstrate a prototype methodology from conceptual to detailed design, using a representative tool set and a combination of existing and to-be-developed interfaces. In the first step, a SysML model of a mission will be created in MagicDraw, but model configuration control will be handled by Teamcenter PLM. In the second step, abstract CAD models of mission systems are created and registered by the PLM system and requirements are transferred from SysML to the abstract CAD models. In the third step, finalized CAD models are checked into Teamcenter and critical design data transferred to the SysML model for system requirements verification. Equivalent processes are carried out on the analysis and simulation side. In the Work Plan, specific features to be developed are identified.

Primary U.S. Work Locations and Key Partners





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Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
InterCAX, LLC	Lead Organization	Industry	Atlanta, Georgia
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Georgia	Maryland

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138508)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

InterCAX, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

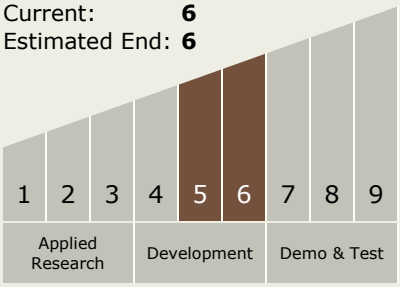
Carlos Torrez

Principal Investigator:

Manas Bajaj

Technology Maturity (TRL)

Start: **5**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.5 Mission Architecture, Systems Analysis and Concept Development
    - TX11.5.2 Tools and Methodologies for Performing Systems Analysis

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System